

We Claim

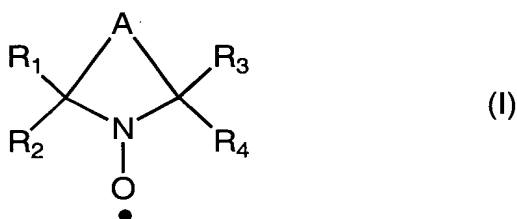
1. A method of preparing modified fluffed pulp comprising

- a) treating cellulose pulp with a nitroxide-mediated oxidation method; and
- b) fluffing the treated cellulose pulp

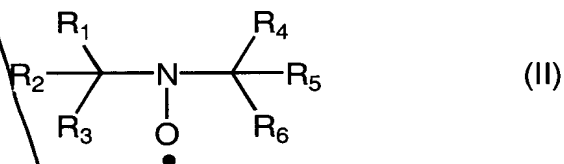
5 whereby the treated cellulose pulp contains from about 1 to about 50 mmole of aldehyde functionality/100 g of cellulose pulp.

2. The method of Claim 1 wherein the nitroxide-mediated oxidation method comprises the step of oxidizing the cellulose pulp in a suitable medium with an oxidant in the presence of a nitroxide radical mediator.

10 3. The method of claim 2 wherein the nitroxyl radical mediator used herein is a di-tertiary alkyl nitroxyl radical having a formula of



or



wherein A is a chain having two or three atoms; each atom is selected from the group consisting of carbon, nitrogen, and oxygen; and the R₁-R₆ groups represent the same or different alkyl groups.

4. The method according to claim 3 further comprising at least one co-catalyst.

~~3bA3~~ 5. The method of claim 2 wherein the treated cellulose pulp has from about 1 to about 20 mmole aldehyde groups/100 g of cellulose pulp.

5 6. The method according to claim 2 wherein the nitroxyl radical mediator is TEMPO or 4-acetamido TEMPO.

~~3bA4~~ 7. The method according to claim 2 wherein the nitroxyl radical mediator is used in an effective amount to mediate the oxidation.

8. The method of claim 7 wherein the amount of the nitroxyl radical mediator is from about 0.001 to about 20% by weight, based on the weight of cellulose pulp.

~~3bA5~~ 9. The method according to claim 2 wherein the oxidant is an alkali or alkaline-earth metal hypohalite having an oxidizing power of from about 0.05 to about 15.0 g active chlorine per 100 g of substrate.

15 10. The method according to claim 9 wherein the oxidant is sodium hypochlorite or sodium hypobromite.

11. The method according to Claim 1 comprising the step of oxidizing the cellulose pulp in aqueous media with about 0.5% to about 20% sodium hypochlorite in the presence of from about 0.005% to about 5.0% 4-acetamido TEMPO, and up to about 5% sodium bromide, all percents by weight based on the weight of the cellulose pulp.

12. The method of claim 11 wherein the cellulose pulp is oxidized in the presence of about 1 to about 5% of sodium hydrochlorite in the presence of 0.01% to about 0.1% 4-acetamido TEMPO; and from about 0.1% to about 2% sodium bromide, all percents by weight based on the weight of the cellulose pulp.

13. The method of claim 11 further comprising oxidizing the cellulose pulp in the presence of from about 0.005 % to about 0.5% polyacrylamide.
14. The method of Claim 1 wherein the treated cellulose pulp has an aldehyde to carboxylic acid functionality ratio of greater than 0.2 based on 100 g
5 of cellulose pulp for each functionality.
15. The modified fluff pulp made according to the method of Claim 1.
16. The modified fluff pulp made according to the method of Claim 11.
17. The modified fluff pulp made according to the method of Claim 13.
- ~~18. A modified fluff pulp having a simultaneous increase in wicking rate and
10 wicking capacity as compared to an unmodified fluff pulp.~~
- ~~19. A modified fluff pulp having from about 1 to about 50 mmole of aldehyde
functionality/100 g of cellulose pulp.~~
20. An absorbent article comprising the modified fluff pulp of Claim 15.
21. An absorbent article comprising the modified fluff pulp of Claim 18.
- 15 22. An absorbent article comprising the modified fluff pulp of Claim 19.